

## MATERIAL SAFETY DATA SHEET

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Version 1.9

## Section 1 - Product and Company Information

Product Name	DICHLOROMETHANE, >=99.5%, A.C.S. REAGENT
Product Number	D65100
Brand	SIAL
Company	Sigma-Aldrich
Address	3050 Spruce Street SAINT LOUIS MO 63103 US
Technical Phone:	800-325-5832
Fax:	800-325-5052
Emergency Phone:	314-776-6555

## Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
DICHLOROMETHANE (STABILIZER: <0.1% AMYLENE)	75-09-2	Yes

Formula	CH2Cl2
Synonyms	Aerotherne MM * Chlorure de methylene (French) * Dichloromethane (DOT:OSHA) * F 30 (chlorocarbon) * Freon 30 * HCC 30 * Khladon 30 * Methane dichloride * Methylene bichloride * Methylene chloride (ACGIH:OSHA) * Methylene dichloride * Metylenu chlorek (Polish) * Narkotil * NCI-C50102 * R30 (refrigerant) * RCRA waste number U080 * Solaesthin * Soleana VDA * Solmethine
RTECS Number:	PA8050000

## Section 3 - Hazards Identification

## EMERGENCY OVERVIEW

Toxic.

Harmful if swallowed. Irritating to eyes, respiratory system and skin. May cause cancer.

OSHA carcinogen. Calif. Prop. 65 carcinogen. Readily absorbed through skin. Target organ: heart because methylene chloride is converted to carbon monoxide in the body. Target organ: central nervous system because of possible dizziness, headache, loss of consciousness and death at high concentrations.

## HMIS RATING

HEALTH: 2\*

FLAMMABILITY: 1

REACTIVITY: 0

## NFPA RATING

HEALTH: 2

FLAMMABILITY: 1

REACTIVITY: 0

\*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

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## Section 4 - First Aid Measures

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### ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

### INHALATION EXPOSURE

If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

### DERMAL EXPOSURE

In case of contact, immediately wash skin with soap and copious amounts of water.

### EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

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## Section 5 - Fire Fighting Measures

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### EXPLOSION LIMITS

Lower: 14 % Upper: 22 %

### AUTOIGNITION TEMP

662 °C

### FLAMMABILITY

N/A

### EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

### FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.  
Specific Hazard(s): Emits toxic fumes under fire conditions.

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## Section 6 - Accidental Release Measures

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### PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves. Wear disposable coveralls and discard them after use.

### METHODS FOR CLEANING UP

Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

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## Section 7 - Handling and Storage

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### HANDLING

User Exposure: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure. For

protection and handling requirements consult CFR title 29 part 1910.1052.

#### STORAGE

Suitable: Keep tightly closed. Store under inert gas.

#### SPECIAL REQUIREMENTS

Heat sensitive. Store under inert gas.

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### Section 8 - Exposure Controls / PPE

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#### ENGINEERING CONTROLS

Use only in a chemical fume hood. Safety shower and eye bath.

#### PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.  
Hand: Compatible chemical-resistant gloves.  
Eye: Chemical safety goggles.

#### GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

#### EXPOSURE LIMITS, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	50 PPM
USA	MSHA Standard-air	TWA	500 PPM (1750 MG/M3)
USA	OSHA.	PEL	8H TWA 25 PPM
New Zealand OEL			
Remarks: check ACGIH TLV			
USA	NIOSH		LOWEST FEASIBLE CONCENTRATION
USA	OSHA.	STEL	15 MIN TWA 125 PPM

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### Section 9 - Physical/Chemical Properties

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Appearance	Physical State: Clear liquid Color: Colorless	
Property	Value	At Temperature or Pressure
Molecular Weight	84.93 AMU	
pH	N/A	
BP/BP Range	40 °C	
MP/MP Range	- 97.0 °C	
Freezing Point	N/A	
Vapor Pressure	353.111 mmHg	20 °C
Vapor Density	2.9 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	1.325 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	

Viscosity	N/A
Surface Tension	N/A
Partition Coefficient	N/A
Decomposition Temp.	N/A
Explosion Limits	Lower: 14 % Upper: 22 %
Flammability	N/A
Autoignition Temp	662 °C
Refractive Index	1.424
Optical Rotation	N/A
Miscellaneous Data	N/A
Solubility	Solubility in Water:Slightly. Solvent: 0.1 g/ml acetone 0.1 g/ml diethyl ether 0.1 g/ml EtOH

N/A = not available

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## Section 10 - Stability and Reactivity

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### STABILITY

Stable: Stable.

Conditions to Avoid: Heat.

Materials to Avoid: Alkali metals, Aluminum.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Hydrogen chloride gas, Phosgene gas.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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## Section 11 - Toxicological Information

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### ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Readily absorbed through skin.

Eye Contact: Causes eye irritation.

Inhalation: Material is irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion: Harmful if swallowed.

### TARGET ORGAN(S) OR SYSTEM(S)

Liver. Pancreas. Target organ: heart because methylene chloride is converted to carbon monoxide in the body. Target organ: central nervous system because of possible dizziness, headache, loss of consciousness and death at high concentrations.

### SIGNS AND SYMPTOMS OF EXPOSURE

Irregular breathing. Pulmonary edema. Effects may be delayed.

Conjunctivitis. Convulsions. Somnolence. Weakness. Drowsiness.

Heavy or prolonged skin exposure may result in the absorption of harmful amounts of material. Increased liver enzymes. Ingestion can cause gastrointestinal disorders, nausea, and vomiting.

Paresthesia. Dichloromethane is metabolized in the body producing carbon monoxide which increases and sustains carboxyhemoglobin levels in the blood, reducing the oxygen-carrying capacity of the blood. A simple asphyxiant, exposure can cause anesthetic action, difficulty in breathing, headache, and dizziness. Prolonged or repeated contact with skin can cause defatting and dermatitis. Contact with eyes can cause redness, tearing, and blurred vision. Ingestion may cause

gastrointestinal irritation. CNS depression.

#### CONDITIONS AGGRAVATED BY EXPOSURE

Existing data suggests that methylene chloride may be a weak mutagen in mammalian systems.

#### TOXICITY DATA

Oral

Human

357 mg/kg

LDLO

Remarks: Peripheral Nerve and Sensation:Paresthesis.

Behavioral:Somnolence (general depressed activity).

Behavioral:Convulsions or effect on seizure threshold.

Oral

Rat

1600 mg/kg

LD50

Remarks: Behavioral:Ataxia.

Inhalation

Rat

52,000 mg/m<sup>3</sup>

LC50

Intraperitoneal

Rat

916 MG/KG

LD50

Oral

Mouse

873 mg/kg

LD50

Inhalation

Mouse

14,400 ppm

LC50

Intraperitoneal

Mouse

437 MG/KG

LD50

Subcutaneous

Mouse

6460 MG/KG

LD50

Intraperitoneal

Dog

1274 MG/KG

LD50

#### IRRITATION DATA

Skin

Rabbit

810 mg

24H  
Remarks: Severe irritation effect

Skin  
Rabbit  
100 mg  
24H  
Remarks: Moderate irritation effect

Eyes  
Rabbit  
162 mg  
Remarks: Moderate irritation effect

Eyes  
Rabbit  
10 mg  
Remarks: Mild irritation effect

Eyes  
Rabbit  
500 mg  
24H  
Remarks: Mild irritation effect

#### CHRONIC EXPOSURE - CARCINOGEN

Result: This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

Species: Rat  
Route of Application: Inhalation  
Dose: 3500 PPM  
Exposure Time: 6H/2Y  
Frequency: I  
Result: Endocrine:Tumors. Tumorigenic:Carcinogenic by RTECS criteria.

Species: Mouse  
Route of Application: Inhalation  
Dose: 2000 PPM  
Exposure Time: 5H/2Y  
Frequency: C  
Result: Tumorigenic:Carcinogenic by RTECS criteria. Lungs, Thorax, or Respiration:Tumors.

#### IARC CARCINOGEN LIST

Rating: Group 2B Group 2B

Rating: Group 2B

#### NTP CARCINOGEN LIST

Rating: Clear evidence.  
Species: Mouse/rat  
Route: Inhalation

#### ACGIH CARCINOGEN LIST

Rating: A3

#### IRIS/EPA CARCINOGEN LIST

Rating: Group B2

#### CHRONIC EXPOSURE - TERATOGEN

Result: Laboratory experiments have shown teratogenic effects.

Species: Rat

Dose: 1250 PPM/7H

Route of Application: Inhalation

Exposure Time: (6-15D PREG)

Result: Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Urogenital system.

Species: Mouse

Dose: 1250 PPM/7H

Route of Application: Inhalation

Exposure Time: (6-15D PREG)

Result: Specific Developmental Abnormalities: Musculoskeletal system.

#### CHRONIC EXPOSURE - MUTAGEN

Species: Human

Dose: 5000 PPM

Exposure Time: 1H

Cell Type: fibroblast

Mutation test: DNA inhibition

Species: Rat

Dose: 160 UMOL/L

Cell Type: Embryo

Mutation test: Morphological transformation.

Species: Rat

Route: Oral

Dose: 1275 MG/KG

Mutation test: DNA damage

Species: Rat

Dose: 30 UMOL/L

Cell Type: liver

Mutation test: DNA damage

Species: Mouse

Route: Inhalation

Dose: 27760 MG/M3/6H/2W-I

Mutation test: Micronucleus test

Species: Mouse

Dose: 400 UMOL/L

Cell Type: liver

Mutation test: DNA damage

Species: Mouse

Route: Inhalation

Dose: 4000 PPM

Exposure Time: 6H

Mutation test: DNA damage

Species: Mouse

Route: Oral

Dose: 1720 MG/KG

Mutation test: DNA damage

Species: Mouse  
Route: Inhalation  
Dose: 27760 MG/M3/6H/2W-I  
Mutation test: Cytogenetic analysis

Species: Mouse  
Route: Inhalation  
Dose: 13880 MG/M3/6H/2W-I  
Mutation test: Sister chromatid exchange

Species: Hamster  
Dose: 1300 UL/PLATE  
Cell Type: Embryo  
Mutation test: Morphological transformation.

Species: Hamster  
Dose: 3000 PPM  
Cell Type: ovary  
Mutation test: DNA damage

Species: Hamster  
Dose: 5000 PPM  
Exposure Time: 1H  
Cell Type: lung  
Mutation test: DNA inhibition

Species: Hamster  
Dose: 6628 MG/L  
Cell Type: ovary  
Mutation test: Other mutation test systems

Species: Hamster  
Dose: 1 UMOL/L  
Cell Type: lung  
Mutation test: Cytogenetic analysis

Species: Hamster  
Dose: 6628 MG/L  
Cell Type: ovary  
Mutation test: Cytogenetic analysis

Species: Hamster  
Dose: 5000 PPM  
Exposure Time: 1H  
Cell Type: lung  
Mutation test: Sister chromatid exchange

Species: Hamster  
Dose: 3000 PPM  
Cell Type: ovary  
Mutation test: Mutation in mammalian somatic cells.

#### CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat  
Dose: 4500 PPM/24H  
Route of Application: Inhalation  
Exposure Time: (1-17D PREG)  
Result: Effects on Newborn: Behavioral.

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#### Section 12 - Ecological Information

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No data available.

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## Section 13 - Disposal Considerations

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### APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations. (DN)Requires special label: "Contains a substance which is regulated by Dannish work environmental law due to the risk of carcinogenic properties."

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## Section 14 - Transport Information

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### DOT

Proper Shipping Name: Dichloromethane  
UN#: 1593  
Class: 6.1  
Packing Group: Packing Group III  
Hazard Label: Toxic Substance  
PIH: Not PIH

### IATA

Proper Shipping Name: Dichloromethane  
IATA UN Number: 1593  
Hazard Class: 6.1  
Packing Group: III

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## Section 15 - Regulatory Information

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### EU DIRECTIVES CLASSIFICATION

Symbol of Danger: Xn  
Indication of Danger: Harmful.  
R: 40  
Risk Statements: Limited evidence of a carcinogenic effect.  
S: 23-24/25-36/37  
Safety Statements: Do not breathe vapor. Avoid contact with skin and eyes. Wear suitable protective clothing and gloves.

### US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Toxic.  
Risk Statements: Harmful if swallowed. Irritating to eyes, respiratory system and skin. May cause cancer.  
Safety Statements: Avoid contact with skin and eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).  
US Statements: OSHA carcinogen. Calif. Prop. 65 carcinogen. Readily absorbed through skin. Target organ: heart because methylene chloride is converted to carbon monoxide in the body. Target organ: central nervous system because of possible dizziness, headache, loss of consciousness and death at high concentrations.

### UNITED STATES REGULATORY INFORMATION

SARA LISTED: Yes  
DEMINIMIS: 0.1 %  
NOTES: This product is subject to SARA section 313 reporting requirements.  
TSCA INVENTORY ITEM: Yes

### UNITED STATES - STATE REGULATORY INFORMATION

OSHA Remarks: OSHA-regulated carcinogen. See CFR title 29 part 1910.1052.

CALIFORNIA PROP - 65

California Prop - 65: This product is or contains chemical(s) known to the state of California to cause cancer. This product is or contains chemical(s) known to the state of California to cause cancer.

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

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Section 16 - Other Information

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DISCLAIMER

For R&D use only. Not for drug, household or other uses.

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2006 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.